



Workplace Safety and Insurance
Appeals Tribunal

Tribunal d'appel de la sécurité professionnelle
et de l'assurance contre les accidents du travail

Post Traumatic Stress Disorder

Discussion Paper prepared for

The Workplace Safety and Insurance Appeals Tribunal

February 2010

Revised: September 2015

Revised: September 2022

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This medical discussion paper will be useful to those seeking general information about the medical issue involved. It is intended to provide a broad and general overview of a medical topic that is frequently considered in Tribunal appeals.

Each medical discussion paper is written by a recognized expert in the field, who has been recommended by the Tribunal's medical counsellors. Each author is asked to present a balanced view of the current medical knowledge on the topic. Discussion papers are not peer reviewed. They are written to be understood by lay individuals.

Discussion papers do not necessarily represent the views of the Tribunal. A vice-chair or panel may consider and rely on the medical information provided in the discussion paper, but the Tribunal is not bound by an opinion expressed in a discussion paper in any particular case.

Every Tribunal decision must be based on the facts of the particular appeal. Tribunal adjudicators recognize that it is always open to the parties to an appeal to rely on or to distinguish a medical discussion paper, and to challenge it with alternative evidence : see *Kamara v. Ontario (Workplace Safety and Insurance Appeals Tribunal)* [2009] O.J. No. 2080 (Ont Div Court). For more information about these papers, please consult the *WSIAT Guide to Medical Information and Medical Assessors*.

Background

Trauma has long been associated with psychological symptoms and disability. The diagnosis of Post-Traumatic Stress Disorder (PTSD) has been extended to non-war trauma including work place accidents, natural disasters, motor vehicle accidents and more recently the COVID-19 pandemic. The diagnosis of Post-Traumatic Stress Disorder is often associated with depression substance abuse, difficulties in interpersonal relationships and self-destructive behaviour.

Definition of PTSD as per Diagnostic and Statistical Manual 5th Edition (DSM 5)

With the introduction of DSM 5, there have been significant changes in the diagnosis of PTSD with PTSD moving from the class of anxiety disorders into a new class of “trauma and stressor-related disorders” which also includes the diagnosis of Acute Stress Disorder. The rationale for the creation of a new class is based on clinical recognition of variable expressions of distress as a result of traumatic experience(s).

The current criteria from DSM 5 are outlined below:

Trauma – Criterion A Stressor:

The person was exposed to actual or threatened death, serious injury or sexual violence in one (or more) of the following ways (**one required**):

1. Direct exposure;
2. Witnessing in person;
3. Indirectly, by learning that a close relative or close friend was exposed to trauma. If the event involved actual or threatened death, it must have been violent or accidental;
4. Repeated or extreme indirect exposure to aversive details of the event(s), usually in the course of professional duties (e.g. first responders, collecting body parts, professionals repeatedly exposed to details of child abuse). This does not include indirect non-professional exposure through electronic media, television, movies, or pictures.

Comment: An event may be traumatic i.e. distressing and upsetting to an individual however to meet the PTSD criteria outlined above the following **MUST** be met i.e. exposed to death, threatened death or serious injury.

There are four clusters of PTSD symptoms in DSM 5 as outlined below.

Criterion B: Intrusion Symptoms

The traumatic event is persistently re-experienced in the following way(s) **(one required)**:

1. Recurrent, involuntary, and intrusive memories;
2. Traumatic nightmares;
3. Dissociative reactions (e.g., flashbacks) which may occur on a continuum from brief episodes to complete loss of consciousness;
4. Intense or prolonged distress after exposure to traumatic reminders;
5. Marked physiological reactivity after exposure to trauma-related stimuli.

Criterion C: Avoidance

Persistent effortful avoidance of distressing trauma-related stimuli after the event **(one required)**:

1. Trauma-related thoughts or feelings;
2. Trauma-related external reminders (e.g., people, places, conversations, activities, objects or situations).

Criterion D: Negative Alterations in Cognitions and Mood

Negative alterations in cognitions and mood that began or worsened after the traumatic event **(two required)**:

1. Inability to recall key features of the traumatic event (usually dissociative amnesia; not due to head injury, alcohol or drugs);
2. Persistent (and often distorted) negative beliefs and expectations about oneself or the world (e.g., "I am bad", "The world is completely dangerous");
3. Persistent distorted blame of self or others for causing the traumatic event or resulting consequences;
4. Persistent negative trauma-related emotions (e.g., fear, horror, anger, guilt, or shame);
5. Feeling alienated from others (e.g., detachment or estrangement);
6. Constricted affect: persistent inability to experience positive emotions;
7. Persistent inability to experience positive emotions.

Criterion E: Alterations in Arousal and Reactivity

Trauma-related alterations in arousal and reactivity that began or worsened after the traumatic event (**two required**):

1. Irritable or aggressive behaviour;
2. Self-destructive or reckless behaviour;
3. Hypervigilance;
4. Exaggerated startle response;
5. Problems in concentration;
6. Sleep Disturbance.

Criterion F: Duration

Persistence of symptoms for more than one month

Criterion G: Functional Significance

Significant symptom-related distress or functional impairment (e.g., social, occupational).

Criterion H: Exclusion

Disturbance is not due to medication, alcohol or substance use or other illnesses.

In DSM 5 there are several specifiers related to dissociative symptoms and time of onset of trauma symptoms. An individual who experiences high levels of dissociation related to either of the following in reaction to trauma-related stimuli.

1. **Depersonalization:** experience of being an outside observer of or detached from one self (e.g., feeling as if “this is not happening to me” or one were in a dream).
2. **De-realization:** experience of unreality, distance or distortion (e.g., “things are not real”).

Specify if: With delayed expression. Full diagnosis is not met until at least six months after the trauma(s), although onset of symptoms may occur immediately.

Acute Stress Disorder in DSM 5

Until DSM IV there was no clinical term for trauma symptoms that occur immediately after the trauma. In military settings the term Combat Stress Reaction has been used for acute

trauma related to war activities. Following the onset of Acute Stress Disorder, the symptoms resolve within 4 weeks of the traumatic event. If the symptoms persist beyond four weeks then the diagnosis becomes PTSD. Acute Stress Disorder has not been well studied but further investigations may help understand who goes on to develop PTSD. The appropriate interventions for Acute Stress Disorder to reduce the risk of developing PTSD have not been clearly identified. Interventions currently offered include Critical Incident Stress Debriefing (CISD) following a significant trauma in the workplace but the benefit of this intervention is mixed. For an individual, cognitive behavioural therapy (CBT) with a trauma focus is the appropriate intervention in the immediate period after the trauma. However it is difficult to obtain CBT in a timely manner in many settings.

Complex PTSD in The International Classification of Disease (ICD 11th edition)

The sequelae of repeated childhood sexual and physical abuse are understood as Complex Post Traumatic Stress Disorder (cPTSD) which is now included in the ICD 11 (International Classification of Disease 11) of diseases but not in DSM 5. Complex PTSD relates to repeated childhood trauma with three core symptom groups in ICD 11 (Maercker 2021):

- emotional regulation difficulties e.g. problems calming down;
- relationship issues e.g. avoidance of relationships;
- negative self-concept e.g. beliefs about self as a failure.

Additional symptoms noted by other authors:

- changes in the value system e.g. the world is unsafe place;
- disturbed perception of the offender e.g. idealization;
- alterations in consciousness e.g. dissociation.

PTSD in ICD 11

In ICD 11 PTSD is defined as developing following a single trauma in adulthood. The core symptoms of classic PTSD in the ICD 11 classification are narrowed down to: re-experience in the present, avoidance of traumatic reminders and a sense of threat. These symptoms can also be found in cPTSD as well. It should be highlighted that the goal of World Health Organization in the development of the new ICD-11 classification was to increase the clinical utility of all diagnoses by having the lowest possible number of core symptoms.

Comorbidity or Co-existing Conditions

Many of the symptoms included as criteria for PTSD in DSM 5 overlap with other disorders: sleep disturbance, concentration problems and irritability are characteristic of generalized anxiety disorder (GAD); depression is characterized by some of the same these symptoms

but depression also may include negative beliefs, self-blame, decreased interest, detachment and emotional numbing. It is therefore not unsurprisingly that with PTSD rates of co-morbidity are very high particularly with depression (Brewin 2020). Some authors argue that many of the PTSD symptoms are general reactions to adversity rather than specific reactions to trauma. Other authors question whether comorbidity would be reduced with a smaller symptom set consisting of those more specific to PTSD such as flashbacks, nightmares, startle and hypervigilance.

Epidemiology – How Common is it?

The lifetime rates for PTSD in the general population in the USA are estimated to be 8% based on several epidemiological studies (Kessler 1995). There is a gender difference with 5% of men and 10% of women experiencing PTSD in their lifetime.

Approximately 40-60% of patients with PTSD have symptoms that become chronic i.e. last longer than 6 months. In addition, co-morbidity, i.e. other disorders being present with PTSD, is very common with up to 80% of patients with PTSD also experiencing other disorders, such as major depression, anxiety, substance abuse.

Development of PTSD

In considering the development of PTSD, features of the trauma as well as the characteristics of the individual need to be carefully considered.

The Trauma: The lifetime prevalence of exposure to traumatic events in the general population is high. In Canada it is estimated that 74% of women and 81% of men have been exposed to an event that could cause PTSD. However the risk of developing PTSD given exposure to trauma (conditional risk) is estimated to be 10-25%. The types of traumas experienced by each gender have unique features with women frequently experiencing interpersonal trauma such as rape and childhood sexual assault, while men frequently experience physical violence, accidents and witness violence. Even though men have a higher prevalence of exposure to traumatic events, women are more likely to develop PTSD even when the type of trauma is controlled. PTSD is also more likely to develop with interpersonal violence such as assault or rape than natural disasters.

The Individual: The most significant personality trait, which accounts for the majority of the variance in developing PTSD, is Neuroticism or Negative Affectivity. This is a temperamental style where the person tends to respond easily to events with anxiety and depression (Bowman 1999). Another important factor is locus of control i.e. where the person believes the control or responsibility for an event lies. If there is a mismatch between the individual's belief about where the control should reside and where it actually resides then PTSD is more likely to develop (i.e. if the person believes that they should have control but they didn't). A history of previous trauma significantly increases

the risk of developing PTSD (Paris 2000). It is important to acknowledge that there are protective factors for PTSD related to complex beliefs about the self, religious faith, political commitment and self-efficacy.

At the present time, there is no consensus whether personal vulnerability or trauma characteristics are more important in the development of PTSD. It is best to conceptualize the development of PTSD as an interaction between the individual with vulnerabilities and risk factors and the trauma including the type, characteristics, and meaning.

Risk Factors for Development of PTSD

Risk factor must be considered along a continuum including pre- trauma, peri-trauma (around the time of the trauma) and post-trauma.

Pre-Trauma: There have been studies that suggest a genetic contribution to PTSD onset particularly in the study of Vietnam veterans. The most consistent pre-trauma risk factors include female gender, past psychiatric history, reported childhood abuse and family psychiatric history. It should be noted that these factors are more predictive of PTSD in some populations i.e. combat vs. civilian PTSD populations. Unresolved childhood trauma increases the risk of PTSD more than seven-fold and has been associated with avoidant symptoms of PTSD. There is evidence that firefighters who engage in catastrophic thinking about life events before they engage in fire services are more likely to develop post traumatic stress after commencing active duty (McFarlane 2007).

Above-average cognitive ability has been identified as a protective factor. Securely attached individuals exhibit fewer symptoms of PTSD where an avoidant style predicts PTSD symptoms.

Trauma severity is a strong predictor of PTSD particularly when the trauma involves combat. Traumas due to deliberate human malice (versus natural or accidental traumas) may be a stronger predictor of PTSD and reduce recovery from PTSD (Brewin et al 2000). Peri-trauma dissociation (emotional disconnection or “zoning out”) is predictive of PTSD diagnosis lasting over six months in duration.

Repeated intense exposures over a period of time leads to an accumulated risk of developing PTSD and this should require the assessment of emergency service personnel that focus on lifetime exposures as well as the immediate antecedent event that prompted the presentation for assessment. The core concept of repeated exposure is sensitization, which refers to a process where there is a progressive increase in the reactivity of the individual to trauma-related cues. There is critical period in the aftermath of traumatic exposure during which irreversible neuronal changes may occur in those who develop PTSD (McFarlane 2007).

Post-Trauma: lack of social support is the primary post-trauma risk factor for developing PTSD. Severity of acute symptoms is predictive of development of PTSD. However, PTSD can develop when no acute symptoms were present (Yehuda 1998). Early research

suggests that acute posttraumatic symptoms of increased heart rate and startle response are predictive of developing PTSD. In some situations people are reluctant to reveal their trauma experience or trauma symptoms due to concern about being labelled as “crazy” or negatively impacting their career.

Resilience: has been defined as the ability to maintain a state of normal equilibrium in the face of extremely unfavourable circumstances. Internal characteristics promoting resilience include self-esteem, trust, resourcefulness, self-efficacy, internal locus of control, secure attachments, sense of humour, sense of mastery, optimism and interpersonal abilities such as social skills, problem-solving skills and impulse control. External factors include safety, religious affiliation, strong role models and emotional sustenance –the extent to which others provide the individual with understanding, companionship, sense of belonging and positive regard (Ahmed 2007).

Neurobiology and Brain Abnormalities with PTSD: morphological and functional abnormalities of the brain associated with PTSD involve the amygdala, hippocampus and prefrontal cortex. The amygdala plays a role in the processing and storage of memory of emotional events. PTSD is associated with hyper-responsiveness in the amygdala and hypo-responsiveness in the prefrontal cortex. Some studies show smaller hippocampal volume associated with PTSD.

In stressful situations, the sympathetic nervous system becomes activated so that adrenaline and noradrenaline are released. Unrestrained activation of the sympathetic nervous system leads to hypervigilance, anxiety and intrusive memories as seen in some people with PTSD. Cortisol and corticotrophin-releasing hormone (CRH) are mediators of stress. PTSD has been associated with increased CRH levels in the cerebrospinal fluid and low levels of circulating cortisol.

Controversy Surrounding the PTSD Diagnosis – Possible Overdiagnosis

At the present time, the overdiagnosis of PTSD is questioned in some clinical areas particularly involving military personnel, legal situations and financial compensation for injury. An important feature is the assessment of disability characterized as “clinically significant impairment” associated with PTSD as seen in one study of US military personnel where the rate of PTSD fell from 11% to 5.4 % when significant impairment was considered in the diagnosis (Dobbs 2009). Dobbs further commented that “But as a diagnosis, PTSD has become so flabby and overstretched, so much a part of culture, that we are almost certainly mistaking other problems for PTSD and thus mistreating them”. PTSD is viewed by some public officials as an overly generalized or invalid diagnostic category that is often induced in or falsified by veterans or others seeking compensation.

There was a recent debate in the British Medical Journal in 2021 (Maudsley Debate) with regards to the question of whether PTSD is overdiagnosed. Several authors identified that the burgeoning rates of PTSD diagnosis as attributable to broadened disease definitions. In addition, the construct of “concept creep” i.e. expansion of a diagnosis to encompass a

broader range of phenomena has been occurring. Specifically exposure to trauma does not equal PTSD. Sceptics point to the role of “compensation culture” and the interests of the “trauma industry”.

Other authors argue that PTSD is commonly underdiagnosed. This is partially based on the fact that only a fraction of people with PTSD are in a position to be assessed for PTSD due to lack of access to mental health care. Studies have shown that less than half of the adults who met criteria for PTSD have sought help from any health professional. The COVID 19 pandemic may have exacerbated the under diagnosis of PTSD. Currently the over or under diagnosis remains a controversial area in PTSD research.

There may be cultural differences with regard to the diagnosis of PTSD as identified by the Ochberg Society for Trauma Journalism. Following the Iraq and Afghanistan wars, only four percent of British veterans suffered from PTSD while American veterans suffered PTSD at a rate of thirty percent (Grinker 2015). Possible explanations include that the British soldier spent a shorter period on deployment i.e. 6 months on deployment compared to 12 months for the US soldiers. Culture may play a role with British soldiers expected to “demonstrate a stiff upper lip” and get on with life while American soldiers largely return home to a society that expects them to be psychologically wounded. However, British veterans are more likely to suffer from depression and drink more compared to their American counterparts.

Another relevant area is the issue of financial compensation i.e. disability for the PTSD diagnosis. For veterans as well as most people, disability payments cease if the person returns to functioning so there is minimal incentive to become more functional and return to work. Another perspective is a shift from a psychiatric diagnosis for combat veterans and front line responders (i.e. EMS, police) to see post combat or post critical incident distress / symptoms not as a disorder but as part of a normal, if painful, healing process. Rachel Yehuda, trauma psychologist, identifies the importance of “re-contextualization” – the process of integrating trauma as normal life experiences.

At Risk Work Environments: Every workplace has the risk of unpredictable disasters and accidents. The emergency services, military, acute medical services, bank officers and train drivers have the most notable attention in the scientific literature (McFarlane 1997). Child welfare workers must also be acknowledged for the client-perpetrated violence as part of their job. However, the most accident-prone industries such as mining, agriculture and fishing should not be neglected as they have a high rate of accidents.

Several employee populations deserve specific attention and focus in the province of Ontario. The EMS / paramedics, police officers (from regional or city services and OPP), fire fighters and health care providers are a high risk population for PTSD as well as suicide. The rate of PTSD for EMS personnel has been found to be 20% which is twice that of the general population. The Tema Center Memorial Trust (www.tema.ca/about.html) is a Canadian hub of education, research, scholarships and training in the fields of Operational Stress Injury and Post-Traumatic Stress Disorder. This organization has been tracking suicides by first responders and military members over time. The Canadian Mental Health Association estimates that in emergency service workers the prevalence of PTSD

is twice the national average i.e. approximately 16%. Paramedics were at the highest risk of developing PTSD (Hong 2013). The Tema organization estimates that 16 to 24% of Canadian paramedics will be diagnosed with PTSD at some point in their career.

In a study by King 2021, 80.1% of child welfare workers reported non-physical violence followed by threat 47.2% and assault 5.8%. The category of experiencing threats was significantly associated with mental health outcomes with depression being most commonly reported. Secondary traumatic stress (STS) which is also known as vicarious trauma or compassion fatigue refers to experiences of professionals who are exposed to other's traumatic stories and as a result can develop their own traumatic symptoms and reactions. Child welfare workers along with other professionals may have exposure to both direct and secondary exposure to dangerous situations. Surveys of child welfare workers reveal that over 50% have high risk of compassion fatigue and that workers feel trapped and hopeless with their work with clients and feel in danger while working with clients. The ACCS-NYU Children's Trauma Institute from New York City has made recommendations to address secondary trauma that include the following: prepare for the crises that will come; target both the individual and the organization; focus on concrete skills; think beyond self-care and recognize success.

Psychological treatment services for work-related PTSD rely on the WSIB or OHIP treatment system. Employee Assistance Programs (EAP) services typically do not provide trauma related treatment as their expertise is lacking. The single largest challenge is timely access to mental health resources with expertise in assessing, diagnosing and treating work related PTSD. Often there is at least a significant wait for access to appropriate treatment resources. In more remote areas of the province, the delay may be up to a year or the specific trauma resources for assessment and treatment are not available at all.

Signs of Psychological Dysfunction Secondary to Workplace Trauma

Supervisors in occupational settings must be able to detect signs that a worker may be experiencing PTSD symptoms (McFarlane 2007). Manifestations may include:

- Increased alcohol use;
- Interpersonal and/or family conflict;
- Social withdrawal;
- Somatic distress;
- Performance deterioration.

Clinical Assessment Tools

There are a variety of structured interviews and self-report measures available for PTSD. These measures tend to be used by clinical programs and clinicians specialized in providing trauma services. Since work related PTSD usually presents to primary care

initially, screening measures in this setting would be beneficial. The Primary Care PTSD Screen (PC-PTSD) is a 4 item scale and 3 positive responses indicate the requirement for a structured clinical interview (Prins 2004). Unfortunately, PTSD screening measures are not used in primary care at this time.

Many individual clinicians rely on the clinical interview to make the diagnosis of PTSD. The CAPS (Clinician Administered PTSD Scale) is commonly used in speciality trauma clinics and it provides information on diagnosis and symptom level. The PCL 5 (PTSD Checklist for DSM 5) is a 20 item self-report measure that assesses the 20 DSM 5 symptoms which screens individuals for PTSD, makes a provisional diagnosis of PTSD and monitors symptoms change. Standardized assessments tools can assist with the diagnosis as well as monitor the effectiveness of treatment over time. The challenge is incorporating such tools into day to day clinical practice.

Natural History of PTSD Over Time

The majority of patients who develop PTSD do recover over time. For example, a longitudinal study by Shalev and Yehuda 1999 showed that 58% of traumatized people recovered by 9 months. However, a significant number of people fail to recover for years, estimated to be 15-25%. On average, the clinical progression of PTSD occurs over a twenty-year span with the patient experiencing an average of 3.3 PTSD episodes and episodes can persist for up to seven years in length (Greenberg 1999).

Diagnosis

The most common diagnostic error associated with PTSD is clinician failure to elicit the information about trauma history (Davidson 1999). Often, distinguishing PTSD from other disorders is difficult, as it shares many symptoms with other psychiatric conditions. The high incidence of co-morbidity (other disorders being present) also complicates diagnosis as the patient may present complaining of depressive or anxiety symptoms.

Workers with a trauma history are more likely to present to their family physician than to mental health services. There is a need to screen for PTSD in patients with: sleep complaints, somatization (multiple physical symptoms), co-morbidity with anxiety or depressive disorders, alcohol or chemical use, suicidal ideation, and high rate of medical service consumption.

There may be a delay in the onset of PTSD symptoms so when trauma symptoms onset six months after the trauma, the classification is delayed-onset PTSD. At times PTSD symptoms may develop years later. This often occurs in the context of another trauma or a significant reminder of the original trauma. For example a police officer may witness a very severe accident that reminds him of previous motor vehicle accidents or a woman with childhood abuse may experience trauma symptoms when she encounters the abuser as an adult.

Misdiagnosis may occur with PTSD. Flashbacks may be misinterpreted as hallucinations and the hyper-vigilance may be seen as paranoia. Numbing may be misinterpreted as depression, and hyper-arousal as anxiety or mood disorder. Avoidance behaviour may be attributed to personality.

Differential Diagnosis

The challenge with the diagnosis of PTSD is eliciting the trauma history as well as distinguishing PTSD from the co-morbid conditions. Kessler's co-morbidity study (1995) showed that 79% of women and 88% of men with lifetime diagnosis PTSD met the criteria for at least one other lifetime psychiatric disorder. The most common co-morbid mental health conditions are major depression, other anxiety disorders and alcohol abuse/dependence while the most common physical health condition is chronic pain. For those who are physically injured, there may be a delay in the recognition and treatment of PTSD. PTSD symptoms may be misinterpreted as physical symptoms such as chronic pain

Malingering must be considered in the differential diagnosis particularly with workplace accidents, motor vehicle accidents or military persons if compensation is an issue. Malingering should be considered if a patient is particularly eager to discuss the trauma as most patients with genuine PTSD avoid discussion of such traumatic events.

Treatment

Treatment of PTSD involves psychosocial and pharmacological interventions. The current standard of treatment is a sequenced model which emphasizes titration and pacing in therapeutic work, as well as working in stages characterized by early, middle and late. Trauma survivors must develop fundamental skills related to self-care, and symptom control so that trauma symptoms and depression are under control before exploring the trauma extensively (middle stage treatment). The therapeutic relationship must be developed so that the patient can disclose trauma history in a safe manner that is not re-traumatizing or destabilizing for the patient. The co-morbidity and severity of the PTSD illness must be taken into account with treatment planning. Co-morbid conditions such as substance abuse and depression may also require specific treatment.

Psychological Treatments

Psychoeducation about PTSD is an early intervention that must be provided to trauma victims and their families. Trauma survivors need to be educated about common symptoms of PTSD including cognitive, behavioural, affective symptoms as well as any changes in their core beliefs i.e. the world is not a safe place. Cognitive Behavioural Therapy (CBT) has been found to be the most effective treatment for PTSD. Irrational beliefs about guilt and safety can be confronted and modified. Exposure therapy has been found to be particularly effective with improvement seen in 60-70% of patients (Foa 2000). The victim constructs a hierarchy of feared situations and is gradually exposed to their feared

situation while using the relaxation techniques to control anxiety. EMDR (Eye Movement Desensitization Reprocessing) is a treatment developed by Dr. Francine Shapiro for PTSD treatment which promises relatively rapid improvement in symptoms. The technique involves bilateral stimulation of the brain through eye movements or sounds to reprocess memories. There are associated imagery and cognitive components as well. Cognitive processing therapy is a newer therapy building on the principles of Cognitive Behavioural Therapy (CBT) and addressing beliefs that arise out of the trauma.

Pharmacological Treatment

The specific serotonin reuptake inhibitors (SSRIs) fluoxetine (Prozac), paroxetine (Paxil), and sertraline (Zoloft) have been most extensively investigated, and found to result in a reduction of symptoms in all three clusters in 40-85% of subjects. Paroxetine (Paxil) is the only SSRI medication in Canada to have the formal indication for treating PTSD and in the USA, Sertraline (Zoloft) is the only SSRI that has received FDA approval for treating PTSD. Venlafaxine (Effexor) with is a serotonin / noradrenaline reuptake inhibitor has been shown to have superior effect in acute phase remission. It is important to note the population used in the study, i.e. combat, civilian interpersonal trauma vs. natural disaster.

Other classes of medication have also been used to treat PTSD. Mood stabilizers including carbamazepine and valproate have been used with some reduction in re-experiencing and arousal symptoms. The atypical antipsychotics have demonstrated some benefit for sleep and hyper-vigilance to the point of being paranoid. Brexpiprazole (Reluxti) is being studied by its manufacturer for PTSD treatment and in combination with a SSRI medication early studies show benefit in PTSD symptoms. One case based study showed benefit in complex PTSD with brexpiprazole specifically for insomnia, nightmares, intrusive negative memories and hyperarousal (O'Connor 2020).

The US military studied prazosin (alpha 1 adrenergic blocker) for disturbed sleep with nightmares, hyper-arousal and irritability in the Afghanistan war (Kung 2012). Prazosin use has been extended to use in the civilian population particularly for PTSD nightmares with some success. This medication avoids the risk of dependence which is present with traditional sleeping medication such as benzodiazepines.

Novel PTSD Treatment: There is significant interest in finding unique treatments for PTSD as over half of PTSD sufferers have enduring and significant impairment in functioning. Only 59% of those with PTSD respond to SSRIs. Most existing treatment do not directly target traumatic memories.

| Treatment | Mechanism of Action | Results | Implementation Stage |
|--|--|---|---|
| Ketamine | Antagonist of glutamate (NMDA) receptor. | Very limited studies. Short lasting effect. | No evidence of clinical effectiveness. |
| Psychedelics i.e. MDMA | Glutamate related. Used with trauma focused therapy. | Facilitate recall of trauma memories without overwhelming affect. | Very preliminary and limited studies. Resource intense. |
| Transcranial Magnetic Simulation (TMS) | Impact on GABAergic function. R>L stimulation may be more effective. | Limited studies with demonstrated benefit. | Early stage. Possible benefit related to prefrontal cortex. |
| Cannabis | Popular belief. Used for coping primarily insomnia. | Harmful effects from cannabis use on PTSD. Benefits are minimal. | Further research needed. |

PTSD in the Workplace: Return to Work Factors and Accommodations

PTSD symptoms at work may emerge in the following ways:

- Memory problems and difficulty retaining information;
- Lack of concentration;
- Feelings of fear or anxiety and panic attacks;
- Poor interactions with coworkers;
- Extreme reactions to situations that trigger memories;
- Absenteeism;
- Interruptions if employee remains in an abusive relationship i.e. harassing phone calls at work;
- Trouble staying awake at work.

Several barriers related to the worker have been identified related to return to work including: ongoing anxiety symptoms, comorbid depression, pain or anger and threat appraisals i.e. negative beliefs about the meaning of PTSD symptoms and over-estimates of the likelihood that workplace traumatic events will re-occur. Another dimension related to

the workplace is the unique work demands of emergency response workers, police officers etc. which require routine exposure to emotionally distressing events and make gradual return to work difficult to implement. Another relevant workplace dimension relates to the interpersonal conflict in the workplace and the tendency to blame the employer (Alden 2012). A negative and/or high conflict environment in the workplace interferes with return to work.

When a traumatized worker returns to work, there must be a receptive and understanding workplace. Administration, supervisors and co-workers need to understand PTSD symptoms and assist in the worker's return to work. Return to work meetings involving the worker, union representative, supervisor(s), occupational health and medical personnel are usually held prior to return. It is essential to identify the employee's limitations related to job performance and specific tasks that may be challenging for them. The employer can identify specific ways to assist the employee in the workplace and documents are available to outline possible accommodation. Employers should provide training for supervisors and coworkers particularly in workplaces where PTSD is frequent. There is also the issue of risk management related to return to work for workers who carry firearms and provide life-saving treatment to the public. The worker must be able to return to the high risk work environment and perform their duties at full capacity.

Bullying in the Workplace and PTSD

Workplace bullying is defined as systematic exposure to negative behaviours at work over an extended period of time in situations where the victim is exposed with little or no possibilities to defend themselves. Workplace bullying has been associated with depression and anxiety, sleep problems, suicidal ideation and long term sickness. In a Scandinavian study changing jobs was an individual remedy for a victim of bullying in the short term. Changing jobs led to a significant reduction in anxiety but there was no change in depression (Rosander 2022). In a study of nurses (Aristidou 2020) four of five participants reported workplace bullying experience as a victim or witness or both. One out of three victims reported moderate to high intensity trauma symptoms. A meta-analysis of bullying (Nielsen 2015) revealed that 57% of the victims of bullying report symptoms of PTSD that exceed the diagnostic threshold of PTSD. Research has also shown that victimization from bullying in school years increases the risk of being bullied in adult life. Bullying can be seen as often a repeated traumatic event with prolonged exposure that shatters the target's cognitive schemas about the world, other people and themselves.

Long Term Outcomes and Economic Costs

The most adverse outcomes are associated with childhood traumas that are repetitive. In the National Co-morbidity Survey, PTSD was associated with 40% elevated odds of high school and college failure, 50% elevated odds of unemployment during an episode and 60% elevated odds of marital instability. PTSD results in an average work loss of 3.6 days/month with an annual productivity loss of \$3 billion in the USA. The level of productivity loss

per case is similar to levels found with depression. There is also an associated mortality with PTSD patients being six times more likely to attempt suicide compared to controls.

Recent COVID-19 Pandemic – Select Articles Related to Mental Health

The recent COVID-19 pandemic posed an unprecedented threat to health care professionals across the world. There has been an associated explosion of studies related to symptoms and dysfunction in various health care providers related to the pandemic. Many of the studies focused on registered nurses. Summarized below are some of the studies that have emerged.

- This paper by Carmassi et al 2020 summarizes the relevant issues for Health Care Workers during COVID-19 as well as SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) in the past. Health care workers in the emergency room and intensive care setting are particularly at risk to highly stressful work –related situations including management of critical medical situations, caring for severely traumatized people, frequently witnessing death and trauma, operating in crowded conditions and shift work. There is converging evidence that health care workers are at high risk for PTSD development particularly due to frequent unpredictable lethal outbreaks and having to manage patient and families expectations during critical situations. As well, the fear of contagion and infecting one's own family has been significant as well as stigmatization and rejection in social circles. The health care workers' perception of adequate training represented a significant protective factor. Positive workplace factors of working in a structured unit, sense of protection in the environment, clear communication particularly for protection are essential. Social isolation was an important factor and those health care workers who had been quarantined were shown to be at higher risk for PTSD as well as health care workers who survived the infection.
- Study from China (Xia 2021) revealed that Chinese nurses experiencing insomnia, high panic intensity and high impact of COVID -19 were predictors of posttraumatic stress and psychological stress in nurses. Married participants had a 1.58 times risk of having posttraumatic stress. Frontline medical staff were more likely to suffer from psychological stress. This study identified that satisfactory sleep, adequate exercise and better diet were protective factors.
- A study involving front line nurses in Texas (Cockerham 2022) investigated the importance of adaptability which is defined as a person's dispositional tendency to adjust themselves to new tasks or environment. Adaptability is a function of the person rather than the situation and this study measured individual adaptability as work stress, uncertainty, crisis and interpersonal-oriented adaptability. This study revealed that nurses who were higher in adaptability and who perceived support from their organization reported fewer trauma symptoms related to COVID-19. The findings related to family support were unexpected –the nurses who reported more family support were likely to report more COVID-19 related PTSD symptoms. Further, nurses who were low in adaptability that perceived more family support were

more likely to report COVID- related PTSD symptoms. It is possible that nurses who stay away from home to avoid family exposure of infection experienced amplified feelings of social isolation.

- Chen et al conducted a large scale multinational survey of 12,000 nurses investigating trauma, burnout and posttraumatic growth among nurses during the COVID-19. 13.3% of nurses reported trauma symptoms and there was a moderate degree of emotional exhaustion which was greater in women. Nurses identified as women, working in ICUs, COVID-19 designated hospital and departments treating COVID-19 patients had high scores in negative mental health outcomes.
- One study examined burnout and PTSD symptoms among Emergency Room Resident Physicians during the Pandemic. A significant proportion of the residents (35%) experience post-traumatic symptoms acutely during the pandemic indicating a high prevalence of acute stress disorder and increased risk of developing PTSD. However there was no significant difference in burnout before, during or after the pandemic. The article discusses early identification and treatment of physicians with trauma symptoms.
- A large Canadian study (Plouffe RA et al 2021) was conducted to determine the impact of morally distressing experience on the mental health of Canadian health care workers during COVID-19. Resource adequacy, positive work life impact and ethical work environment negatively predicted severity of moral distress. Moral distress significantly and positively predicted symptoms of depression, anxiety and PTSD. This group argues that there is an urgent need for health care environments to implement strategies that are designed to prevent long term moral and psychological stress.
- The concept of moral injury has arisen in the context of the COVID-19 pandemic with health care workers. Moral injury is a type of trauma characterized by guilt, existential crisis and loss of trust that develops following a perceived moral violation specifically being unable to provide care to patients. There are significant system issues both in the USA and Canada that contribute to associated grief, trauma and sense of betrayal (Dean 2020).
- There are limited published studies highlighting interventions to mitigate COVID-19 trauma related symptoms in health care providers. Weiner et al 2020 study called REST (Reduction of Stress) utilized an on line cognitive behavioural tool of 7 sessions with a wait control group however actual results have not been published. A tool called Perceived Stress Scale (PSS-10) was used as an outcome measure and the primary outcome was a decrease in score at 8 weeks. Other interventions include virtual support groups and access to counsellors and psychiatrists however published results are limited.

Conclusion and Final Comment

Post-traumatic stress disorder can be a chronic mental illness that develops after exposure to a life event or multiple life events that threaten death or serious injury. Initially, the focus for the development of PTSD was on the trauma attempting specifically to characterise the severity and nature of the trauma leading to PTSD. However, large studies have shown the relative risk of developing PTSD is only 10-25% after being exposed to a traumatic event. This has lead researchers to focus on vulnerabilities and risk factors in those being exposed, i.e. the victim. The most consistent pre-trauma risk factors have been shown to be female gender, reported childhood abuse and family psychiatric history. Other relevant factors related to the development of PTSD include dissociation at the time of the trauma, severity of the trauma (in combat, repeated trauma in the workplace) and perceived support after the event.

Trauma treatment has become sophisticated with a staged, sequenced and titrated treatment approach. In Canada there are limited specialized trauma treatment centres and these are located in large urban centres usually associated with academic health science centres. This makes access to specialized trauma care for those located in smaller communities or remote locations difficult. Several serotonin reuptake inhibitor antidepressants have been shown to reduce some PTSD symptoms and a variety of other medications including mood stabilisers and atypical antipsychotics and Prazosin has been used for trauma disturbed sleep. Cognitive Behavioural Therapy and, in particular, exposure therapy and cognitive processing therapy have been shown to be effective treatment for PTSD. Unique treatments such as TMS, psychedelics and other pharmacological agents are being studied.

The recent COVID-19 pandemic has impacted many people significantly with anxiety, depression and trauma symptoms. Health care workers have been particularly impact with similar symptoms of anxiety, depression and trauma symptoms as well as moral injury emerging following perceived moral violation. These workers will likely continue to emerge for care and treatment now and the upcoming time.

Frequently Asked Questions

1. What are the relevant diagnostic criteria for PTSD per DSM 5?

Trauma: The person was exposed to actual or threatened death, serious injury or sexual violence in one (or more) of the following ways:

1. Directly experiencing the traumatic event(s).
2. Witnessing, in person, the event(s) as it occurred to others.
3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse). This does not include indirect nonprofessional exposure through electronic media, television, movies or pictures

Four Clusters of Symptoms:

- **Intrusion Symptoms**-intrusive memories, traumatic nightmares, dissociative reactions (flashbacks), prolonged distress or marked physiological activity after exposure to trauma reminders
- **Avoidance of**-trauma-related thoughts or feelings and external reminders
- **Negative alterations in cognition and mood**-inability to recall key features of traumatic event, persistent and distorted negative beliefs, persistent negative trauma-related emotions, feeling alienated, constricted affect
- **Alterations in arousal**-irritable or aggressive behaviour, self-destructive behaviour, hypervigilance, exaggerated startle response, problems in concentration, sleep disturbance

Other:

- one month persistence of symptoms
- Significant symptom-related distress or functional impairment
- Exclusion-not due to medication, alcohol or substance use or other illness

2. What is the difference between PTSD (DSM 5) and complex PTSD (International Classification of Disease 11) and how is this relevant to diagnosis and treatment?

PTSD is traditionally defined as developing in adulthood following a single trauma. Three core symptoms have been identified in ICD 11:

- Re-experience in the present
- Avoidance of traumatic reminders
- Sense of threat

PTSD often has co-existing conditions including of mood and anxiety disorders, alcohol and substance abuse and impulsive behaviour. Evidence based psychological treatment approaches including Cognitive Behavioural Therapy (CBT), Cognitive Processing Therapy (CPT) and EMDR can be utilized in treatment.

Complex PTSD relates to repeated childhood trauma with 3 core symptoms identified in ICD 11:

- Emotional regulation difficulties
- Relationship issues
- Negative self-concept

Complex PTSD can have co-existing conditions similar to PTSD and in addition there can be self-harm and suicidal behaviour as well as dysfunctional relationships that lead to further trauma. The repeated trauma can have a significant impact on the child's social and emotional development that often leads to difficulties that persist into adulthood. This disorder can be more challenging to treat given the extensive impact of the traumas. Typically cPTSD requires a staged treatment approach.

3. Is exposure to death or life threatening circumstances required for the diagnosis of PTSD?

This is a controversial topic as the application of the diagnostic criteria does not appear to be consistent over different clinical settings. The DSM 5 diagnosis identifies that the "person was exposed to actual or threatened death, or sexual violence". Challenges may emerge in the following situations

- a) Workplace bullying
- b) Other occupations i.e. child protection workers
- c) Vicarious traumatization

a) Bullying is a challenging situation to assess the possible development of PTSD. Workplace bullying is defined as a systemic exposure to negative behaviours in the work place and the victim is exposed with little or no possibilities to defend themselves. Workplace bullying has been associated with depression and anxiety, sleep problems, suicidal ideation and long term physical sickness. These syndromes and diagnoses may be an appropriate alternate to a PTSD diagnosis.

b) Child protection workers have a significant rate of threats and assaults in the workplace. The literature notes that experiencing threats was significantly associated with depression. In some extreme circumstances threats and actual physical violence could meet the DSM 5 criteria for trauma.

c) Vicarious or secondary trauma is the experience of professionals who are exposed to other's traumatic stories and then develop their own traumatic symptoms and reactions. Over 50% of child welfare worker have high risk of compassion fatigue and feel trapped in their work with clients. It is controversial whether this meets the trauma criteria threshold for PTSD.

4. Who is at risk for developing PTSD?

The key risk factors identified in the scientific literature include:

- Personality trait of Negative Affectivity where people respond to events with anxiety and depression
- History of previous trauma-repeated intense exposures in particular
- Trauma severity is a strong predictor particularly in combat
- Female gender
- Those who lack social support
- Past psychiatric history and family psychiatric history

5. What mental health conditions are commonly seen with PTSD?

Co-morbidity is common with PTSD and approximately 80% of people with PTSD have at least one other lifetime psychiatric disorder. The most common co-occurring conditions are major depression, anxiety disorders, alcohol abuse / dependence and chronic pain. Malingering should be considered particularly with workplace accidents, motor vehicle accidents or military personnel if compensation is an issue.

6. What role does the workplace play in the development and the continuation of PTSD?

It is recognized that certain workplace environments have a high rate of trauma and thus workers are at higher risk for PTSD in emergency services, military, acute medical services,

banks and rail industry. If the workplace is supportive, the risk of developing PTSD may be reduced. However in some workplaces, workers experience a “secondary traumatization” by the workplace’s negative response and lack of support. Often return to work is difficult for those workers with a diagnosis of PTSD. With the unique demands of emergency response workers, police officers etc. a gradual return to work is often difficult to implement.

7. What is the risk that PTSD may be overdiagnosed at the present time? How can this risk be mitigated?

At the present time, the over diagnosis of PTSD is questioned in some clinical areas particularly involving military personnel, legal situations and where there is financial compensation for injury. Some authors argue that the diagnosis of PTSD has become so “flabby and overstretched” that other diagnoses may be overlooked. Other authors identify the construct of “concept creep” meaning the expansion of a diagnosis to encompass a broad range of phenomena has been occurring.

To the contrary some authors argue that PTSD is commonly underdiagnosed. This is partially based on the fact that only a fraction of people with PTSD are in a position to be assessed for PTSD due to lack of access to mental health care. Studies have shown that less than half of the adults who meet criteria for PTSD have sought help from any health professional.

In an attempt to mitigate bias with regards to PTSD diagnosis, a thorough diagnostic assessment should be completed and when possible evidence based tools should be used for the diagnosis. The assessor needs to be sensitive to aspects of gain particularly financial related to the PTSD diagnosis.

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